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ABSTRACT

Standardized reading tests exert a great influence on curriculum materials, teaching methods, and student perceptions of the nature of reading; these tests must reflect the best recent research findings. Passage dependency research has attempted to increase the accuracy of reading tests, and has focused on the following four areas: (1) reading comprehension as the amount of knowledge the reader gains from the reading, (2) reading comprehension measured by students' ability to answer questions after having read the passage that they could not have answered beforehand, (3) identification of strategies students use in answering questions correctly without the aid of the passage, and (4) recommendations for making reading comprehension tests more passage dependent. There is a need to go beyond such research to a psycholinguistic definition of reading comprehension in which comprehension is the construction of meaning, not merely a passive discovery of meaning in text. Increasing the dependency of the reader on the passage might very well inhibit worthwhile information processing strategies. As opposed to the "manipulative" techniques of much of the mainstream research in this area, Kenneth Goodman's naturalistic model of reading is a valid alternative, working within real reading situations and emphasizing miscue analysis to illumine the comprehension process. (DF)

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Beyond Passage Dependency:

A Closer Look at What Reading Comprehension Tests Measure

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Standardized tests in general (Perrone, 1977) and standardized reading tests in particular (Meier, 1974; McCracken, 1977; Cook, 1977) have come under fire from a variety of sources for a variety of reasons. It is not our intention here to become embroiled in the controversy surrounding standardized testing and evaluation, although we do consider this a crucial issue in education, and particularly urgent in regard to reading instruction and assessment. Our purpose is to examine one proposal to measure reading comprehension more accurately by making test items more nearly passage dependent. Passage dependency researchers raise what we consider to be crucial theoretical and practical issues in regard to the direction of comprehension research and reading test design. We identify and discuss these issues, suggest the need to go beyond passage dependency in developing more accurate and useful measures of reading comprehension, and recommend a psycholinguistic model of the reading process against which to re-evaluate current reading achievement and diagnostic tests. We consider this paper to be prefatory to our concern with the validity of reading comprehension tests. It is speculative by design and intended to be suggestive rather than convincing. With these qualifications in mind we proceed.

It was our reading of recent research on the passage dependency of the comprehension components of reading achievement and diagnostic tests (Tuinman, 1973-74; Allington, Chodus, Domaracki and Truex, 1977) which stimulated our interest in the question of the validity of measures of reading comprehension, and which suggested to us the need for a psycholinguistic theory-based reading test. Briefly, the passage dependency of any test of comprehension is the degree to which the

items can be answered without reading the accompanying passage. Passage dependency research has been interpreted to indicate that several widely used reading tests may fail to give an accurate measure of reading comprehension due to a significant number of test items that can be answered correctly more often than chance would allow without reading the stimulus passage. We were intrigued by four aspects of passage dependency research: 1) the operational definition of reading comprehension as "how much knowledge the individual gained through the reading" (Allington et al, 1977, p. 369); 2) the statement that "reading comprehension is measured only if the student can answer questions after reading that he could not answer prior to reading" (Allington et al, 1977, p. 370); 3) the identification of strategies subjects used in answering questions correctly without the aid of the passage (Tuinman, 1973-74, p. 208); and 4) the recommendations for making reading comprehension tests more nearly passage dependent (Allington et al, 1977, p. 374). We will discuss each of these aspects of passage dependency research as they relate to certain key theoretical and practical issues in comprehension research and test design. The first two points are discussed in the following section.

COMPREHENSION AS "KNOWLEDGE GAINED" AND THE ROLE OF PRIOR KNOWLEDGE IN THE COMPREHENSION PROCESS: TOWARD A PSYCHOLINGUISTIC DEFINITION OF READING COMPREHENSION

Defining reading comprehension as "knowledge gained through reading" is not unique to passage dependency research but is a widely accepted definition (Bormuth, 1969; Anderson, 1972). Bormuth (1969) has applied this definition and suggested its implications:

> ...comprehension ability is thought to be a set of generalized knowledge-acquisition skills which permit people to acquire and exhibit information gained as a

> consequence of reading printed language...This definition asserts that comprehension is a response to the language system...and a knowledge of how that system works permits people to acquire whatever information is encoded in language. (p. 50)

This gives rise to our first concern with defining comprehension as "knowledge gained": the suggestion that reading is under the control of the text. The theory of reading implicit in this definition is a strictly linguistic theory and fails to take into account the findings of psycholinguistic research. (It neglects the "psycho" in the psycholinguistic process.) John Carroll (1972) has suggested that "comprehension may be regarded as a process that contains at least two stages: (a) apprehension of linguistic information, and (b) relating that information to wider context" (p. 13). Bormuth's definition, and that of the passage dependency advocates (either stated or implied), suggests that comprehension is a single stage process, equivalent to Carroll's first stage; that is, "apprehension of linguistic information." Carroll goes on to make a statement which we believe raises a central issue in comprehension research, and which lends support to a claim for a psycholinguistic, rather than a passage dependent, definition of reading comprehension:

> Even more generally, the kind of problem posed by this analysis is the explanation of what processes occur in what we have called "relating linguistic information to a wider context." The study of linguistic rules whereby language receivers gain certain types of information from messages is important, but equally important -- and probably independent of purely linguistic study -- is the study of how the language user processes that information in order to assimilate or integrate it with his prior knowledge or cognitive structure. (Carroll, 1972, p. 14: emphasis added)

Meaning does not reside exclusively in the text, but is constructed from the linguistic information in the text and from the experiential background and prior knowledge the reader brings to the reading task.

A classic example of the dependence of comprehension on context and prior knowledge is the sentence, "The notes were sour because the seams were split," which becomes comprehensible only when the language processer knows that the topic is bagpipes (Olson, 1977, p. 260). We will return to the question of prior knowledge and the locus of meaning in our consideration of an alternative definition of reading comprehension.

Our second concern with defining comprehension as "knowledge gained" is expressed by Goodman in the discussion section at the end of Carroll's paper (Carroll, 1972, p. 26). Goodman raises the point that there has not been adequate attention to two different aspects of language use: the acquisition of knowledge through language (knowledge gained) and the understanding of a message which is already within the conceptual grasp of the language user. Our concern is that defining reading comprehension as "knowledge gained" may restrict the domain of comprehension research, and may result in comprehension tests that measure only one aspect of language use. Are we only concerned with "reading to learn" or should we also consider reading as understanding a message which contains little or no new information? We suggest that this question bears directly on how we teach reading and what we choose to measure on reading comprehension tests. Reading comprehension ought to be more than the ability to answer questions at the end of a comprehension test. We would like to avoid the instructional implications of one child's definition of reading as "what you do before you answer the questions" (McCracken, 1977, p. 74).

At this point we offer an alternative to the definition of reading comprehension as "knowledge gained through reading." The standard definition of reading as advanced by Aaron and others is

"getting meaning from the printed page." While this is an improvement over the "information gained" definition it does not go far enough, even if the emphasis is placed on the first word. DeBoer and Dallman, in the days before psycholinguistic emphases, advocated a switch in a couple of words to make the definition read "Bringing meaning to the printed page." Juxtaposed, the two definitions do a more adequate job of stating what we believe occurs as a person comprehends, and suggest the following psycholinguistic definition of comprehension: "Bringing meaning to the printed page in order to 'make sense' of a printed message." This definition suggests that comprehension is a "constructive" process..., the reader "acting on" the linguistic information in print and "making" sense out of it. Meaning does not reside exclusively in the text but also in our heads, and comprehension involves both the ability to process linguistic information (which is in the text) and the ability to act on that information, to relate it to prior knowledge, and to transform it using our existing mental operations. We quote from two influential writers, Frank Smith and Jean Piaget, whom we believe have a great deal to contribute to comprehension research:

> ...the perceiver brings a highly structured knowledge of the world into every perceptual situation. Rather than saying that he discovers order and regularities that are properties of the environment, it is more appropriate to say that the perceiver imposes his own organization upon the information that reaches his receptor systems. (Smith, 1971, p. 187)

> Let us recall that the general function of operations is to act on the real by enriching it with settings and structures permitting its assimilation, and that this general effort of comprehension, in which the subject must ceaselessly invent and construct in order to be able to assimilate, is expressed by attempts to transform and not to copy. (Piaget, 1974, p. 17)

Comprehension is a response to the language system, as Bormuth contends, but it is a response by an active language processor who brings prior knowledge to bear on the comprehension task, and who "constructs" rather than simply "discovers" meaning in text. "That every written text contains a precise meaning, which readers passively receive, is a common misconception detrimental to research on comprehension" (Goodman and Goodman, 1977, p. 324). What this suggests to us is the need to move away from a purely linguistic theory of comprehension, away from an empiricist's notion of knowing, toward a psycholinguistic theory of comprehension based on a cognitive conceptualization of knowing.

COMPREHENSION STRATEGIES AND NATURAL READING

Having discussed our conerns with the first two aspects of passage dependency research, which led into the realm of theory and which is highly speculative, we turn now to a consideration of the last two aspects of passage dependency research which are more practical but no less speculative. Tuinman (1973-74), in reviewing the literature on passage dependency, lists a number of possible ways subjects could have answered test items correctly without reading the relevant passage. These include: 1) knowing the answer from prior learning; 2) eliminating irrelevant distractors; 3) using information embedded in preceding questions; and 4) associating words in an item stem and in the correct response (p. 208). What intrigued us was that these same strategies, which the passage dependency advocates see as contaminants, are considered valid information processing strategies (Smith, 1971) and valid reading strategies (Goodman, 1972). The rough equivalents to these strategies in a psycholinguistic

model of reading might be: 1) what one is capable of taking away from messages will depend upon the level of knowledge that one already possesses; 2) the extraction of meaning from text involves the reduction of uncertainty; 3) using extended context to get at meaning; and 4) using knowledge of surface structure to get at the deep structure.

Our concern with passage dependency research, and with all comprehension research that is based on a purely linguistic theory of language comprehension, is that, in attempting to put reading under the control of the written text certain valid comprehension processes may be ignored or devalued. A highly passage dependent reading comprehension test may measure more accurately "knowledge gained through reading" by factoring out the reader's prior learning, but perhaps it accomplishes this at the risk of inhibiting the use of valid reading strategies. A highly passage dependent test might punish rather than reward efficient reading behavior by taking away the prior knowledge, the language competence and the information processing strategies the reader brings to the comprehension task. Attempts to correct the deficiencies of reading comprehension tests which focus exclusively on the text should be reconsidered in light of psycholinguistic theory to assure that manipulating the content of the passages and the syntax of the test questions has not resulted in making the reading qualitatively different from normal, everyday, natural reading. As Carroll (1972) has noted, the important question here, of concern to all researchers (and testers), is whether the processes occurring in our experiments (or in our carefully constructed measuring instruments) are truly similar to those occurring in natural situations (p. 26).

Allington et al (1977, p. 374) have summarized several of the procedures suggested by various researchers for constructing compre-

hension tests which account for and ultimately factor out passage independent items. These procedures include: pretesting items on a group of students and then eliminating those which can be answered by a greater than chance number of students; using short passages with a single item per passage to eliminate interrelationships among items which serve as cues to subsequent answers; the use of passages whose content is unfamiliar or treated in a novel manner to eliminate or reduce the factor of prior knowledge. We suggest the need to look more closely at these procedures in light of the concerns expressed above. We have reiterated these concerns in the following questions:

Are we interfering with, and thus distorting, the comprehension process by attempting to eliminate the use of prior knowledge in reading comprehension?

What is the role of prior knowledge in language comprehension?

Are we constructing reading tests which "fracture language, chop it into pieces, pull things out for their use, turn them into abstractions and then test the performance that kids employ to handle the much more difficult task"? (Goodman, 1975, p. 628)

What process are we measuring in the testing situation and are these processes truly similar to those occurring in natural reading situations?

Are we rewarding rather than punishing the use of efficient comprehension strategies?

What are these strategies?

We do not offer simple, pat answers to these questions. We have none -- yet. We do offer the work of Ken Goodman as an example of research that is dealing directly with these questions, and that is providing valuable insight into the reading process. We cannot elaborate the Goodman model of reading here. We would like to sketch briefly those aspects of Goodman's work which we consider most relevant to our discussion. Goodman's theory is based on an extensive

collection and analysis of oral reading miscues (Goodman and Goodman, 1977). Goodman maintains that oral reading miscues are the windows on the reading process: "Because an oral response is generated while meaning is being constructed, it not only is a form of linguistic performance but also provides a powerful means of examining process and underlying competence" (Goodman and Goodman, 1977, p. 318). Goodman's emphasis is on the comprehension process, and miscue analysis allows the tester to witness a reader's attempts to "construct" meaning, to "make sense" of a written message.

In addition to being a powerful research tool for gaining insight into the comprehension process, we suggest that miscue analysis could serve as a model against which to assess the accuracy and usefulness of current reading comprehension tests and informal reading inventories. In an insightful article, D. M. Kemp (1976) has pointed out the limitations of standardized reading tests and the advantages of miscue analysis: "If it is the tester's intention to look beyond an individual score and to examine the techniques by which meaning is being extracted, then it becomes important to investigate the processes with which readers operate" (p. 82). Kemp also speaks to our concern with the validity of standardized reading comprehension tests: "If the teacher's objective is to examine the reading processes...the objective itself subsumes the tester's understanding of what the reading processes are that need to be examined" (p. 83). We question the validity of standardized reading comprehension tests on the grounds that they are not based on an adequate theory of comprehension. We question the recommendations of passage dependency research on the same grounds. What we suggest is the need to go beyond passage dependency in constructing more accurate measures of reading comprehension.

We "second" Roger Farr's motion for "more extensive observations of the reading behaviors of subjects engaged in reading...conducted for a variety of reading tests under a variety of conditions" (Farr, 1970, p. 9: emphasis added). And we concur with Farr's suggestion that the work of psycholinguists such as Goodman offer initial leads along this line.

Finally, we would like to say a word about Goodman's methodology and throw in an interesting aside for good measure. We highly recommend a most lucid analysis of Goodman's model of reading by Cambourne (1976-77), which includes the following passage related to Goodman's methodology:

> Goodman asserts that his research differs from the mainstream of research in reading in at least 1 important way: in its attemps to generate data in settings which approach "real" reading situations as closely as possible. His claim that "we worked with real kids reading real books in real schoo's. Everything we learned we learned from kids"...is an important one...because it assigns a "naturalistic" viewpoint to his research methodology. (p. 612)

We would like to encourage researchers to consider a "naturalistic viewpoint" as a valid alternative to what Cambourne has called the "manipulative" orientation at the other end of the reading research continuum. Our aside, which follows, is an illustration of the potential of such a perspective.

We would like to point out the similarities between the research methodologies and perspectives of Goodman and Jean Piaget. Both have looked at patterns of errors that children make as they attempt to apply what they know in order to make sense of the world. Goodman's theory of reading grew out of his fascination with the miscues children make in oral reading (Goodman, 1976, p. 1). Piaget's life's work was instigated by his fascination with unusual or unexpected replies by French children in response

to Sir Cyril Burt's reasoning tests: "It seemed to (Piaget) that the contents of the children's errors and the means by which they arrived at wrong solutions were not fortuitous but systematic and indicative of underlying mental structures which generated them" (Elkind, 1976, p. 63). Both men began by examining children's errors on a reasoning task: one developed a theory of reading based on this examination; the other developed a theory of knowing. And both men operate at the "naturalistic" end of the research continuum.

A SUMMARY, SOME PERTINENT RESEARCH, AND MORE QUESTIONS TO CONSIDER

We have looked at one attempt to increase the accuracy of reading comprehension tests, represented by passage dependency research, and have discussed some of the theoretical and practical implications of this line of research for the direction of comprehension research and the design of more accurate measures of reading comprehension. We have suggested the need to "go beyond" passage dependency research and a passage dependent definition of reading, and have recommended a psycholinguistic definition of reading comprehension to guide research and test design. Finally, we have offered Goodman's miscue analysis and his "naturalistic" orientation as powerful alternatives to current reading comprehension tests and research methodology. We conclude by citing some of the current research which is relevant to the concerns raised in this paper, and by offering some additional questions which we feel need to be answered before a valid measure of reading comprehension is possible.

An interesting extension of Goodman's work with oral miscues is represented by current unpublished studies of non-identical fillers of cloze blanks (responses that do not match the deleted words), which show remarkable correspondence to oral reading miscues (Lindberg, 1977; Rousch, 1977). Such modified cloze procedure may shed light on the comprehension process in silent reading, and may suggest a more accurate way to measure comprehension.

Several researchers have addressed the question of what the reader brings to the comprehension task: Pearson (1977) has discussed the role of a reader's "scripts" in processing text; Pichert and Anderson (1977) have considered the influence of different "perspectives" on comprehension and recall; and Kintsch (1976) has suggested that schema theory may provide insight into how preknowledge functions in the numerous inferences that are required in understanding text. And finally, we recommend the kind of research represented by Olshavsky's investigation of comprehension strategies (Olshavsky, 1976-77).

Our final recommendation is quite simple: we need to take a closer look at what reading comprehension tests do, and do not, measure. Hopefully the questions discussed in this paper provide a framework and suggest a direction for such an examination. Below are some additional questions which we find interesting, and which suggest areas for further research:

What are the underlying assumptions about the reading process upon which current reading tests are based? Are these assumptions consistent with the most recent research findings?

What are "valid" test-taking strategies and how are they like, or different from, valid reading strategies? Are the reader's purposes for reading in a test situation the same, or similar to, his purposes for normal reading? And a final "hard" question: Can standardized, objective, machine-scored reading tests adequately measure a complex cognitive process like comprehension? If so, is such a test currently available? If not. how do we break the news to the testing industry?

Standardized reading tests exert a tremendous influence on curriculum materials, teaching methods and students' perceptions of what reading is all about. It seems imperative that these tests reflect the most recent findings of the research community. Are these tests consistent with the most comprehensive theory of the reading process? Do they provide insight into an individual's comprehension strategies? Do they measure a real ability to understand a printed message? We feel that there is work to be done before we can answer "yes" to these questions.

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